

• Appl. No. 09/931,434  
Amendment dated December 12, 2003  
Reply to Office Action of September 12, 2003

### LISTING OF CLAIMS

1 - 5. (Cancelled)

6. (currently amended) A method for controlling the velocity of a DC electric motor, said motor having an input PWM signal and a motor current, said method comprising the following steps:

(1) providing said PWM signal and said motor current to an estimator connected to said motor;

(2) providing a reference velocity and an estimated motor velocity to a controller; and

(3) ~~The method in claim 5, comprising the additional step of calibrating said motor by~~

the following method:

a) choosing at least one PWM duty cycle value of interest; and

~~b) applying a startup PWM duty cycle of sufficient magnitude to ensure motion of said motor;~~

e) b) performing a first test wherein the first chosen duty cycle is applied in at least two periods, each of said periods being of opposite polarity from the period preceding it, and the current in said motor is measured during each of said periods ;

~~d) performing a test for each additional chosen PWM duty cycle value of~~

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~~interest, wherein each of said PWM duty cycles is applied in at least two periods, each of said periods being of opposite polarity from the period preceding it, and the current in the motor is measured during each of said periods; and~~  
~~e) calculating the apparent resistance of the motor.~~

7. (new) The method of claim 6 wherein said estimator generates an estimated motor velocity using fuzzy logic.

8. (new) The method of claim 6, wherein said controller is a PI controller.

9. (new) The method of claim 8, wherein said PI controller generates a PWM signal based upon said reference velocity and said estimated motor velocity.

10. (new) The method of claim 6, further comprising the additional step of, prior to performing said first test, applying a startup PWM duty cycle of sufficient magnitude to ensure motion of said motor.

11. (new) The method of claim 6, further comprising the additional step of performing a test for each additional chosen PWM duty cycle value of interest, wherein each of said PWM duty cycles is applied in at least two periods, each of said periods being of opposite polarity

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from the period preceding it, and the current in the motor is measured during each of said periods.

12. (new) The method of claim 6, further comprising the additional step of calculating the apparent resistance of the motor.

13. (new) The method of claim 11, further comprising the additional step of calculating the apparent resistance of the motor